

## A NEW *PASPALUM* L. (GRAMINEAE) FROM NEW CALEDONIA AND VANUATU

Bernard Toutain

Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), 10 rue Pierre Curie, 94704 Maisons Alfort Cedex, France.

### Summary

*Paspalum moratii* sp. nov. is described and its relationship with allied species is discussed.

### Introduction

The genus *Paspalum* L. (Gramineae) is represented in New Caledonia by about 13 species (Toutain 1989). Four of them, presumably indigenous, are mentioned in accounts of the vegetation of many Pacific islands including those of Vanuatu. They are *P. orbiculare* G. Forster, *P. cartilagineum* Presl, *P. distichum* L. and *P. vaginatum* Sw. Eight other species were introduced more or less recently from America, mainly for lawns and pastures. They are *P. dilatatum* Poir., *P. urvillei* Steudel, *P. conjugatum* Bergius, *P. paniculatum* L., *P. notatum* Fluegge, *P. sauriae* Parodi, *P. plicatum* Michx. and *P. wettsteinii* Hack. In Vanuatu, *P. commersonii* Lam. and *P. scrobiculatum* L. are also found. The weed *P. fimbriatum* Kunth is established in some parts of Vanuatu but in New Caledonia it has been collected only once in Noumea.

The material of *Paspalum* from New Caledonia and Vanuatu held in the ORSTOM\* Herbarium (NOU) and in the CIRAD laboratory of Port Laguerre has recently been critically re-examined.

In the limited area of these two archipelagoes, each species is quite homogeneous, the characters show a narrow range of variations, and the differences between species are clear, so that local specimens are not particularly difficult to identify. The identifications made were checked against published descriptions of *Paspalum* species in books on tropical grasses (Hitchcock 1936; Bor 1960; Backer & Backhuyen van den Brink 1968; Burkart 1969; Hutchinson & Dalziel 1972; Smith 1979; Koyama 1987; Simon 1990). All species were easily identified, except for one which remained unplaced.

Specimens of this plant sent to botanists in various parts of the world were identified as *P. commersonii*, *P. scrobiculatum*, *P. orbiculare*, and even *P. thunbergii* Kunth ex Steudel! Even though specialists working with dry specimens recognize many similarities when comparing the plant from New Caledonia and Vanuatu with reference material, the varied determinations suggest that it is basically different from these species.

Clayton (1975) encountered difficulties in distinguishing the following five species of African *Paspalum*: *P. scrobiculatum*, *P. commersonii*, *P. polystachyum* R. Br., *P. orbiculare* and *P. cartilagineum*. He concluded that there were not sufficient grounds to separate them and therefore included them in the *Paspalum scrobiculatum* complex whose diagnostic morphological features were given later by Clayton and Renvoize (1982).

The characters used by Clayton coincide with those present in our unplaced *Paspalum* material which hasty identification might thus place in the *P. scrobiculatum* complex. However, such identification does not take into account other particular characters, such as the number of racemes, which is never more than two in the unplaced material, the sterile lemma, which is generally slightly transversely wrinkled, and the upper glume, which is crumpled.

Two further characteristics of this controversial plant are not quite the same as those of *P. scrobiculatum*. The spikelets are somewhat bigger (2.2 to 3.1 mm long as compared with 1.8 to 2.5 mm in *P. scrobiculatum*), and the stigmas are always white, whereas those of *P. scrobiculatum* are generally violet.

\* ORSTOM, Institut Français de Recherches Scientifiques pour le Développement en Coopération, Centre de Nouméa.

Growing in the Port Laguerre pasture-plant collection beside a row of *P. orbiculare*, the plant in question showed a rather different vegetative behaviour and frequency of flowering. It appeared much more sensitive to drought and to competition from surrounding grasses than its neighbour and died out in a few years. The culms were only seasonally present and for a much shorter time than those of *P. orbiculare*. However, in the vegetative stage, it was easily confused in the field with plants of the latter species.

All these observed differences are, I believe, sufficient to justify considering this plant a distinct species.

***Paspalum moratii* Toutain sp. nov.**

Gramen perenne caespitosum. Culmi erecti, c. 70 cm alti. Foliorum laminae lineares, 5–25 cm longae et 7–11 mm latae, herbaceae, acuminatae. Ligulae membranaceae, c. 0.8 mm longae. Inflorescentiae unum vel duos racemos gerentes, racemus inferior sessilis et racemus superior breve pedunculatus. Racemi 3.0–7.5 cm longi, in medio latiores. Rhachis plana, 1.5–3.0 mm lata. Spiculae singulares, subrotundae in ambitu, glabrae, 2.2–3.1 mm longae. Gluma inferior deest. Gluma superior spiculam aequans, quinque-nervia, plus minusve corrugata. Floris sterilis lemma quinquenervium, plerumque transversim plicatum, pallide viride. Floris fertilis lemma paleaque spiculam aequantes, induratae, punctulatae, maturitate nitidae stramineae. Stigma album. **Typus:** Port Laguerre, Nouvelle Calédonie, cultivé en collection, originaire de Koné, prairie sur alluvions anciennes, avril 1985, *B. Toutain* 4028 (holo: P; iso: BRI,NOU).

Erect short-lived perennial, more or less tufted, to about 0.7 m tall. Culms erect with about 6 nodes (3 or 4 clearly visible), sometimes producing a second culm. Leaf blades linear, c. 20 (5–25) cm long, c. 9 (7–11) mm wide, flat, herbaceous, sparsely pilose above and along the margin, glabrous below, gradually long-acuminate. Ligule c. 0.8 mm long, membranous. Sheaths sparsely pilose along the margin. Blades and sheaths become brownish in drying. Inflorescence exerted with (1 or) 2 terminal racemes back to back in the upper sheath before flowering, the lower raceme sessile, the upper on a more or less short peduncle up to 10 mm long, ciliolate at the junction. Racemes 3.0–7.5 cm long, straight or slightly arcuate, moderately thick, wider in the middle than at the base. Rachis c. 2 (1.5–3.0) mm wide, bearing spikelets in 2 rows on one side, flat on the other side. Spikelets on very short pedicels, solitary, broadly ovate or suborbicular in outline, rounded at apex, c. 2.8 (2.2–3.1) mm long, 2.0–2.5 mm wide, glabrous. Lower glume absent. Upper glume rounded, as long as the spikelet, 5-nerved, irregularly crumpled. Sterile lemma membranous, 5-nerved, usually transversely wrinkled near the margin, dull, pale green. Fertile lemma and palea indurate, equalling the spikelet, punctulate, straw coloured or pale brown and shiny at maturity. Stigma creamy white, light brown when dry. Chromosome number of the type specimen:  $2n = 40$  (*S. Essad*, 1989, Versailles, France). **Figs 1 & 2.**

**Specimens studied** (all in NOU): New Caledonia. Nouméa, base du Ouen Toro, May 1964, *MacKee* 11493; île Ouen, Nov 1965, *Blanchon* 1638; Bourail Nessadiou, Centre Agronomique, Jul 1969, *Schmid* s.n.; La Foa, Ouano, bord de mare, Jul 1969, *Schmid* 2941 bis; Boulouparis, Ouaméni, prairie sur péridotites, May 1970, *Veillon* 2147; La Foa, Pocquereux, prairie sur sol sodique acide, Mar 1985, *Toutain* 4025; Port Laguerre, jardin de collection, Apr 1985, *Toutain* 4107; La Foa, Pocquereux, Apr 1986, *Toutain* 4109. Vanuatu. Efate, côte Sud, Est de la rivière Téouma, marécage à touradons, Jul 1971, *Raynal* 16045.

**Distribution and habitat:** *P. moratii* is not very common. It grows in grasslands and native pastures on seasonally very wet and very dry soils, usually in association with *P. orbiculare* and other native herbaceous plants. Its distribution suggests that this species is indigenous.

**Notes:** *Paspalum moratii* cannot be confused with the Asiatic *P. thunbergii* Kunth ex Steudel because that has 2–5 racemes on an elongated axis, and leaf blades densely pilose on both surfaces.

There are some differences between it and the Asiatic species *P. metzii* Steudel whose taxonomic position is somewhat controversial. Both species have white stigmas when living and often a short distance between the racemes.

*P. ciliatifolium* Michx. is mentioned by Jacques (1939) as a species resembling *P. orbiculare* and collected in New Caledonia by Montrouzier, Pancher and Deplanche. *P.*

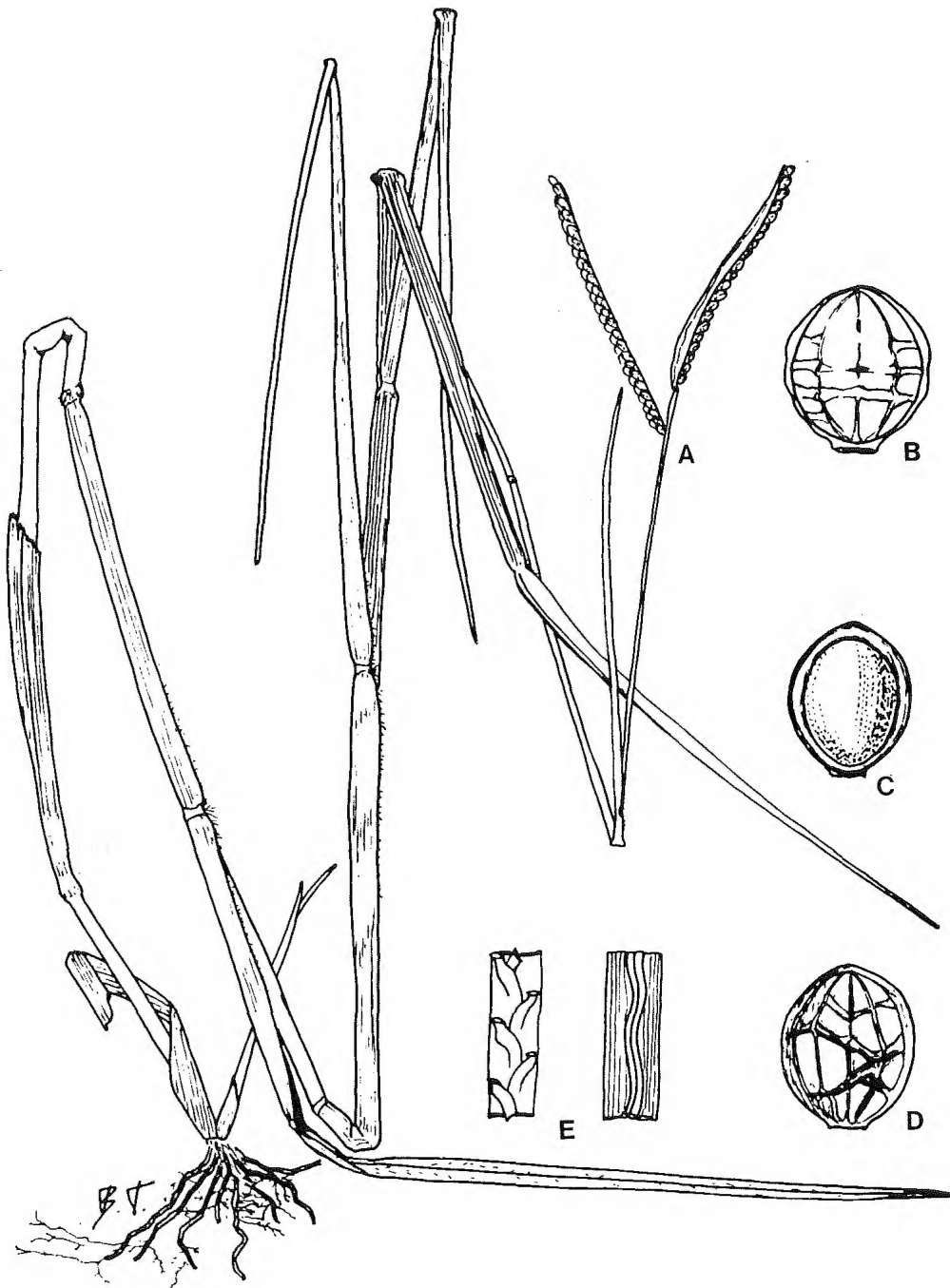


Fig. 1. *Paspalum moratii*: A. culm with typical inflorescence  $\times 0.65$ . B. lemma of sterile floret, abaxial view  $\times 7.5$ . C. lemma and palea of fertile floret, abaxial view  $\times 7.5$ . D. upper glume, adaxial view  $\times 7.5$ . E. details of part of rachis (left, abaxial view; right, adaxial view)  $\times 3$ . Del. B. Toutain.

*moratii* cannot be confused with the American species *P. ciliatifolium*, the latter having 1–3 slender racemes, spikelets about 2 mm long, and somatic chromosome number  $2n = 20$ . In appearance the spikelet of *P. moratii* is not unlike that of some other American species such as *P. lindenianum* A. Rich. or *P. distortum* Chase.

#### Key to species

1. Spikelets crumpled and/or transversely wrinkled . . . . . 2  
Spikelets not crumpled . . . . . 4
2. Spikelets 2 mm long, only 1 raceme [West Indies] . . . . . **P. distortum**  
Spikelets more than 2.2 mm long, 1–2 racemes . . . . . 3
3. Glume and sterile lemma deeply crumpled, caespitose in dense tussocks  
[West Indies] . . . . . **P. lindenianum**  
Sterile lemma transversely wrinkled, glume slightly crumpled, caespitose  
in small tufts . . . . . **P. moratii**
4. Spikelets less than 2.5 mm long . . . . . 5  
Spikelets 2.5 mm long or more . . . . . 9
5. Racemes 1–3 . . . . . 6  
Racemes 2–10, distant . . . . . 7
6. Racemes arcuate, spikelets glabrous or minutely pubescent, 2 mm long  
[North and Central America] . . . . . **P. ciliatifolium**  
Racemes straight, spikelets glabrous, 2.0–2.5 mm long, 7-nerved [Tropical  
Asia] . . . . . **P. metzii**<sup>1</sup>
7. Spikelets 2.0–2.5 mm long, rotundate elliptic, 5–7-nerved . . . . . **P. commersonii**<sup>1</sup>  
Spikelets about 2 mm long, orbicular . . . . . 8
8. Sterile lemma more or less cartilaginous, 2–3 racemes . . . . . **P. cartilagineum**<sup>1</sup>  
Sterile lemma membranous, spikelets 3-nerved . . . . . **P. orbiculare**<sup>1</sup>
9. Racemes 3–5, spikelets elliptic, mucronate at apex, glabrous or pubescent  
[China, Japan] . . . . . **P. thunbergii**  
Racemes 2, V-shaped . . . . . 10
10. Spikelets ovate, rhizomes stout . . . . . **P. notatum**  
Spikelets acute, rhizomes slender . . . . . 11
11. Glume shortly hairy, fresh water . . . . . **P. distichum**  
Glume hairless, salt water . . . . . **P. vaginatum**

<sup>1</sup> included in *P. scrobiculatum* complex

**Etymology:** This species is dedicated to Prof. Philippe Morat, botanist and agrostologist, Director of the Laboratoire de Phanérogamie at the Muséum National d'Histoire Naturelle in Paris. He spent several years in New Caledonia, in charge of the ORSTOM laboratory of botany, and contributed to our understanding of plants of that island.

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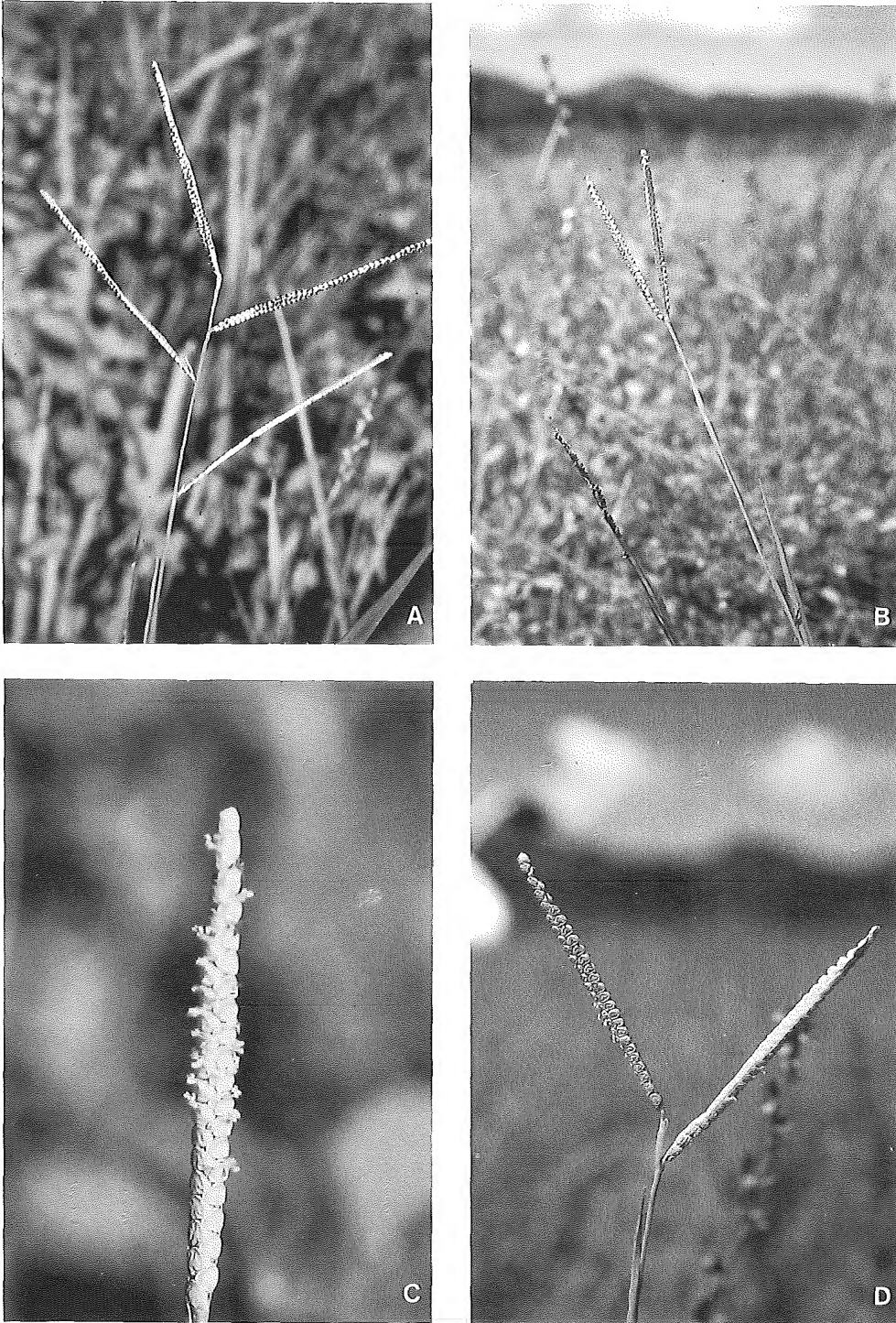


Fig. 2. *Paspalum orbiculare*: A. culm apex at flowering. B-D. *Paspalum moratii*: B,D culm apex at flowering. C. abaxial view of a single raceme.

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